POPKIN
SOFTWARE

System Architect

FSA-EAF

Reporting

WORLD CLASS TRAINING

The System Architect Reporting System

The reporting system can create reports in two different ways:

- **Report Editor Mode**

  This uses a Graphical User Interface (Report Editor) to specify report criteria.

- **Text Editor Mode**

  Allows access to commands not supported by the Report Editor.

The Report Editor Mode

The Report Editor can be accessed by selecting the **Report Generator...** from the **Reports** menu, or via the toolbar.

Figure 1 Accessing the Report Generator

The **Reports.rpt** report file will normally load as the default reports file.

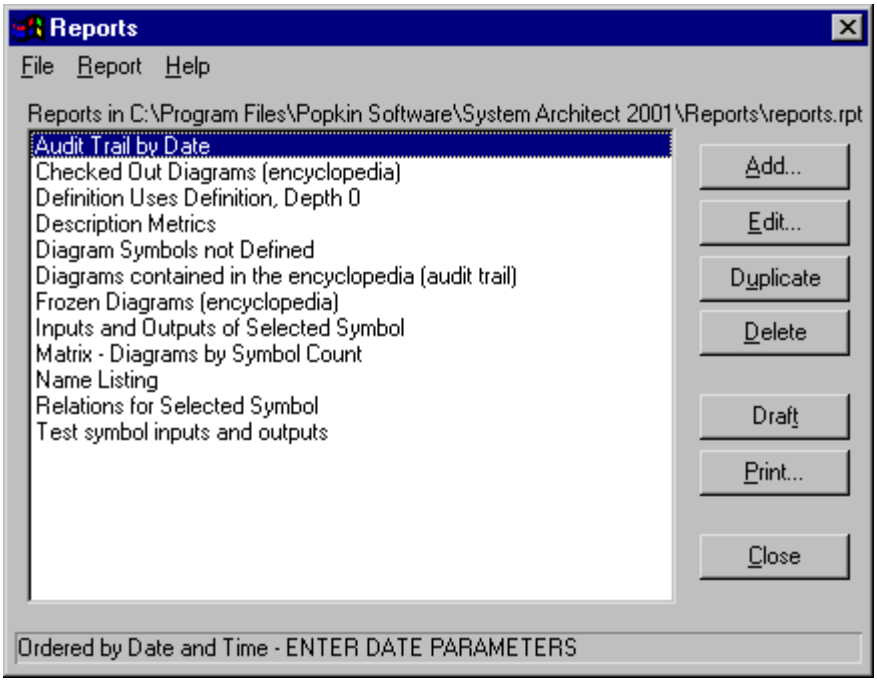


Figure 2 Reports Window

The Reporting System uses a language similar to SQL to interrogate the System Architect encyclopedia. The SQL may be generated via the Report Writer. A number of Standard Report files are provided. This chapter explains how reports, from the Report files, can be drafted using the Report Writer and how you may create your own reports.

Opening the Reports Window

Select the **Report Generator...** option from the **Reports** menu, or click on the Report generator button on the Main Toolbar.

Opening a Report File

When the Reports window opens the default Report file **Reports.rpt** may be displayed, showing an alphabetic list of available reports.

Another Report file can be opened by selecting the **Open Report File...** option from the Reports window **File** menu.

☞ *New Report Files may be created from within System Architect or by using a standard Text Editor.*

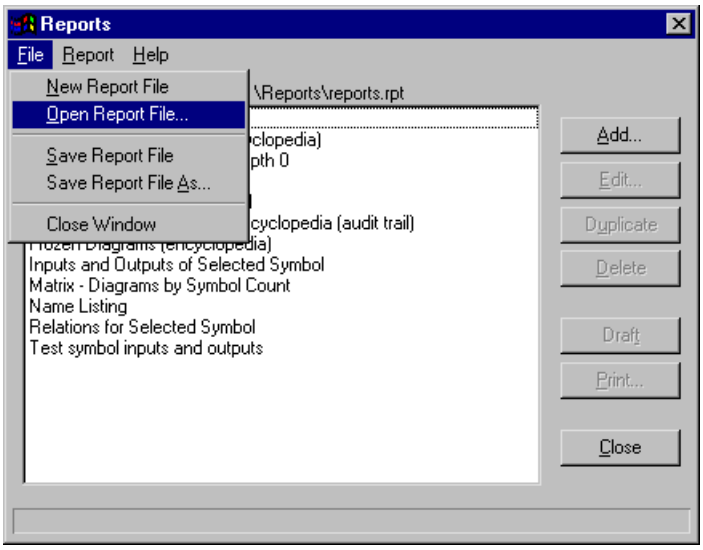


Figure 3 Reports Window and File menu

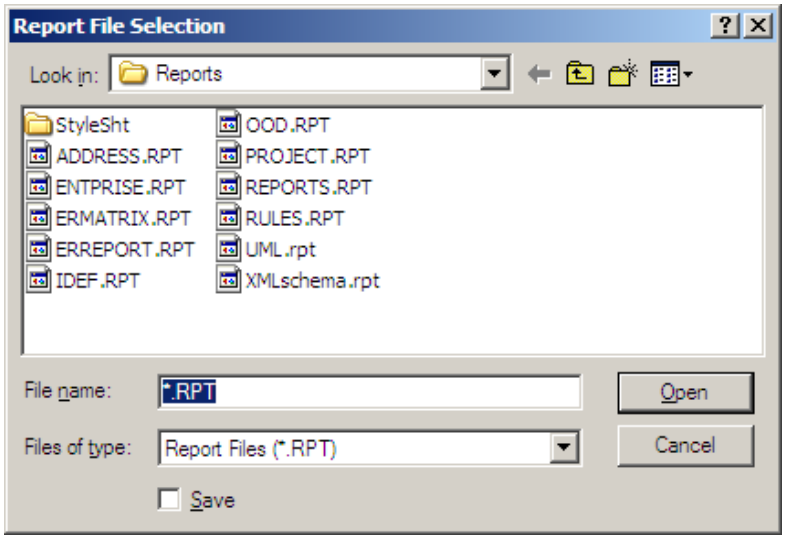


Figure 4 Report File Selection dialog

☞ *The Save checkbox will store the selected file, in SA2001.ini, as the default Report File.*

Access the Report Generator and create a new report file

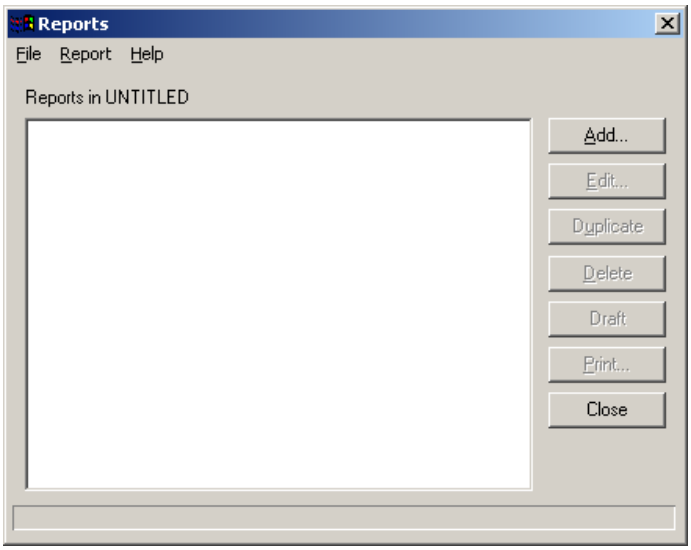


Figure 5 New Report File

The Report Writer

A new report file is empty and initially named “UNTITLED”. It will be named and saved in a later step.

Click the **Add…** button and the New Report window will appear.

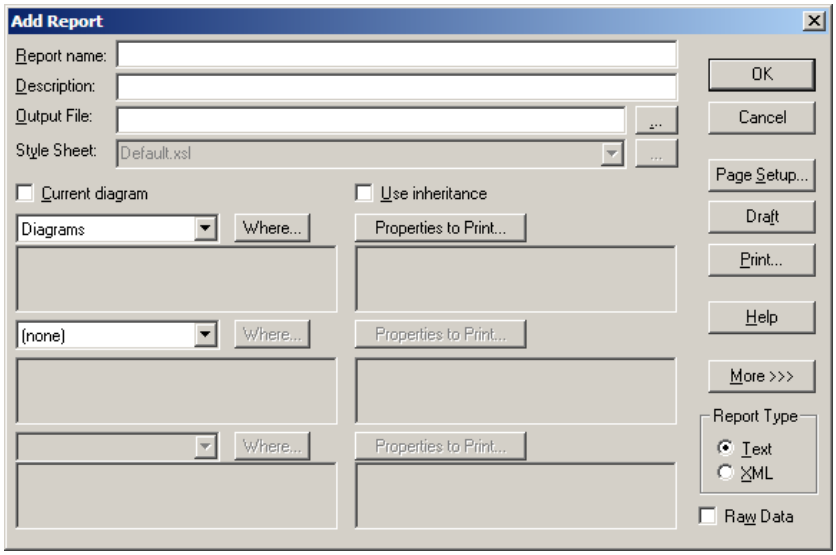


Figure 6 Adding a Report

Name the report **“Diagram Report”** and enter a description **of “Summary of all Diagrams in the Encyclopedia”**.

Specifying Selection Criteria

We now need to decide upon which information to extract from the dictionary.

The drop down list box, which by default has Diagrams displayed, allows us to select a dictionary class on which the extraction criteria will be primarily based. There are three possible classes against which items can be stored in the dictionary; **Diagrams**, **Symbols** and **Definitions**.

When a diagram is created it is stored with a class of Diagram.

When we place a Symbol within the Diagram, it has a class of Symbol, and if we enter a Definition for the symbol it is classed as a Definition.

In this example we will be selecting all diagrams, so no changes need to be made to the defaults.

Properties to Print

In our example we are reporting upon Diagrams.

The report is to display the **Name** of the diagram. These properties may be accessed through the appropriate **Properties to Print...** button.

The available properties for all Diagrams are listed in the Available Properties section on the left.

☞ *The available properties list represents ONLY the properties that can be printed, based upon the report construct so far. If we restrict the diagrams to a certain type of diagram, then only properties for that particular diagram type will be shown here.*

✋ Select the **Name** property from the Available Property list and press **Add>>** to move it to the Properties to Print list. (Double-clicking will also add or remove from the list.)

The Report Editor will assign the name of the property as the property's default label. This can be changed by modifying the Layout options once the property is highlighted in the Properties to Print list.

✋ Modify the Name Label to read **Diagram Name**.

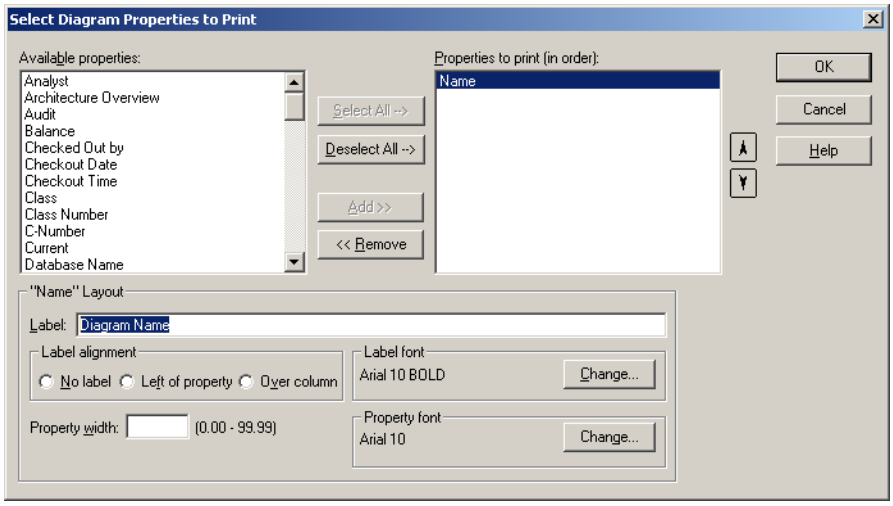


Figure 7 Custom Label for Print Property

Add **Type** to the list of properties to print.

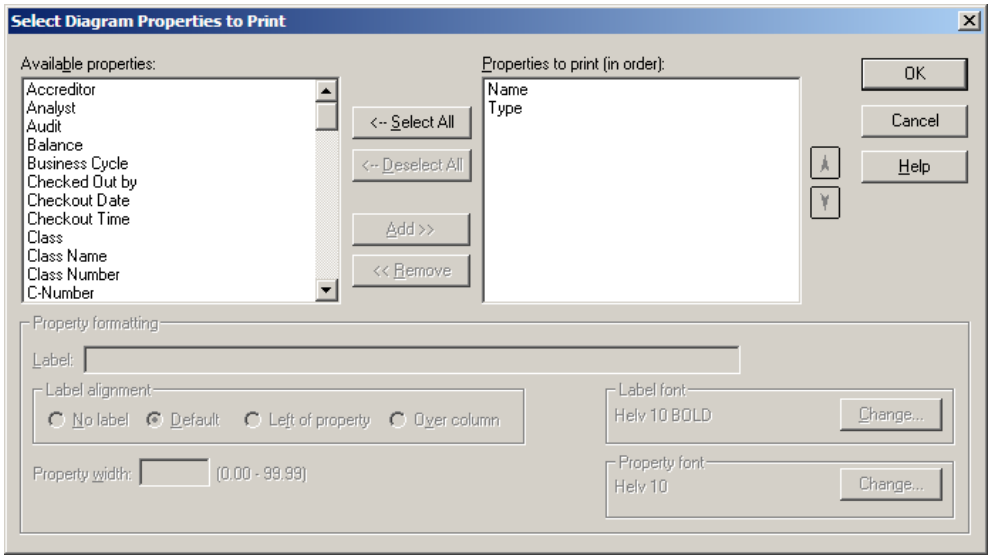


Figure 8 "Properties to Print" Dialog Box

Click on the **OK** button to exit the Properties to Print dialog.

The window below the **Properties to Print...** button will identify the selected properties to print.

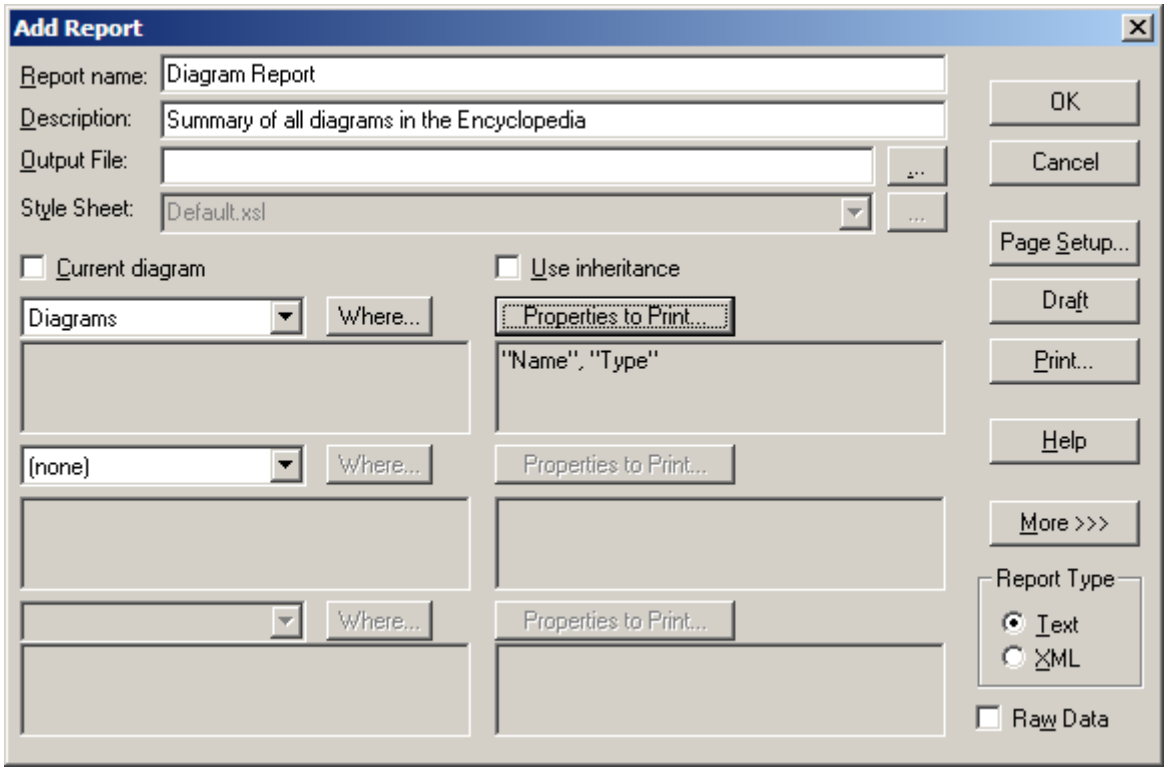


Figure 9 "Add Report" Window With Example Data

Drafting Reports

A Draft Report will be displayed within a window of its own. Draft Reports can be generated either from the **Draft** button in the Report Writer or from the **Draft** button in the Reports window.

When a Draft Report is generated it ignores certain commands that would otherwise be used to format the final Printed Report. Font changes and Graphic commands will not be represented in the Draft report.

✋ Click the **Draft…** button.

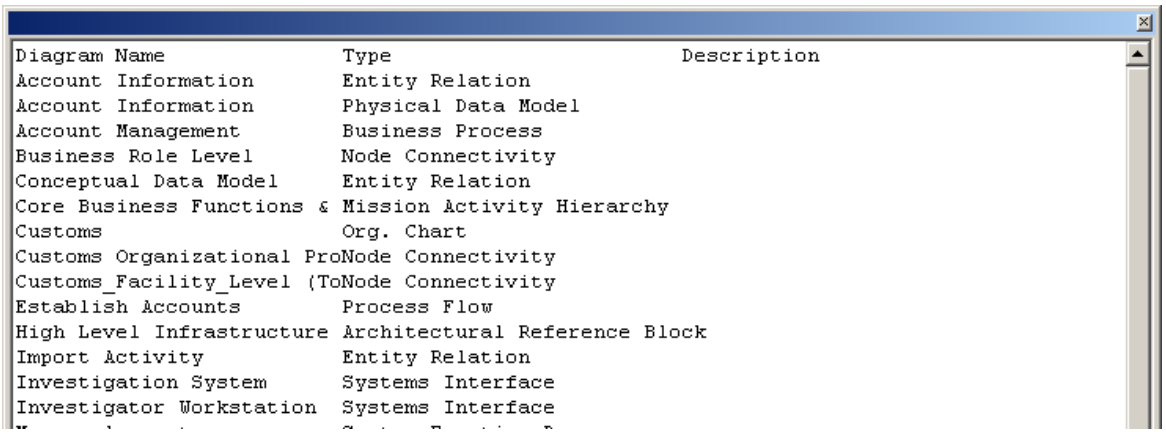


Diagram Name	Type	Description
Account Information	Entity Relation	
Account Information	Physical Data Model	
Account Management	Business Process	
Business Role Level	Node Connectivity	
Conceptual Data Model	Entity Relation	
Core Business Functions &	Mission Activity Hierarchy	
Customs	Org. Chart	
Customs Organizational Pro	Node Connectivity	
Customs_Facility_Level (To	Node Connectivity	
Establish Accounts	Process Flow	
High Level Infrastructure	Architectural Reference Block	
Import Activity	Entity Relation	
Investigation System	Systems Interface	
Investigator Workstation	Systems Interface	

Figure 10 Example Draft Report

Once a Draft Report is on your screen, it can redirected to the printer by using its **floating menu**, but the results will be less attractive than a fully formatted report.

☞ *The Copy option may be used to transfer any highlighted text to the clipboard.*

Raw Data

If the Raw Data checkbox is checked and Text is selected as the Report Type, System Architect will generate a .dbf file that can be opened in Microsoft Access. You will then be able to build sub-quieries against your report output and create well formatted reports based on the new table.

If XML is select as the report Type you will be able to apply a Stylesheet to the report contents. This will render the report into HTML formatting.

In both cases you are required to provided a path and filename for the dbf or XML file.

✋ Experiment with the Text and XML output formats.

Running the Report

If the **Print...** button is pressed a fully formatted report will be sent to the default printer.

The output can be redirected to a file that contains all the necessary embedded printer codes.

The Printer Setup command button provides access to the default printer driver.

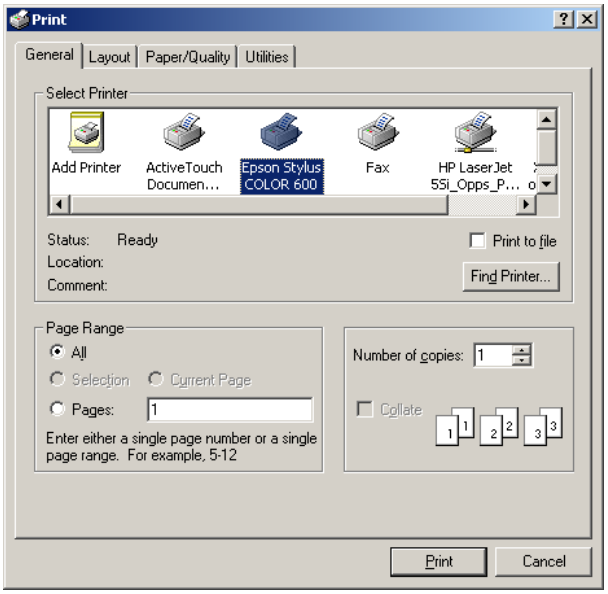


Figure 11 Print dialog

✋ Return to the Reports window.

☞ *The description of the selected report is shown on the status bar of the dialog.*

Saving the Report File

A new or existing Report File may be saved by selecting the **Save Report File** option from the Reports' **File** menu.

Existing Report Files can be saved under a new name or in a different directory by selecting the **Save Report File As...** option.

✋ Save the report file as **TEAF.rpt**.

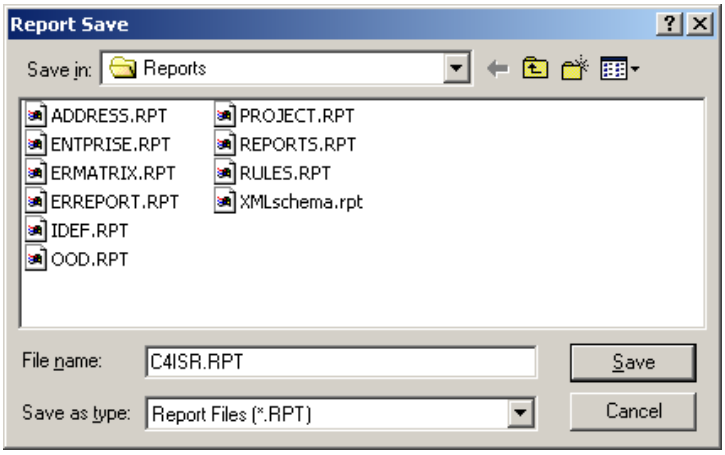


Figure 12 Saving a Report File

Reporting Relationships between Definitions

All reports so far have been one dimensional. This means that they have been one layer reports, reporting on either diagrams, symbols or definitions. The dictionary has an additional layer of complexity which allows correspondingly more complex reports.

The dictionary is logically divided into two parts:

Entities	Relationships
Diagrams Symbols Definitions	Contains relationships between the entities

The entities within an encyclopedia are all maintained by user action, creating diagrams, placing symbols etc. The relationships are maintained automatically by System Architect.

The diagram below gives a view of some of these relationships.

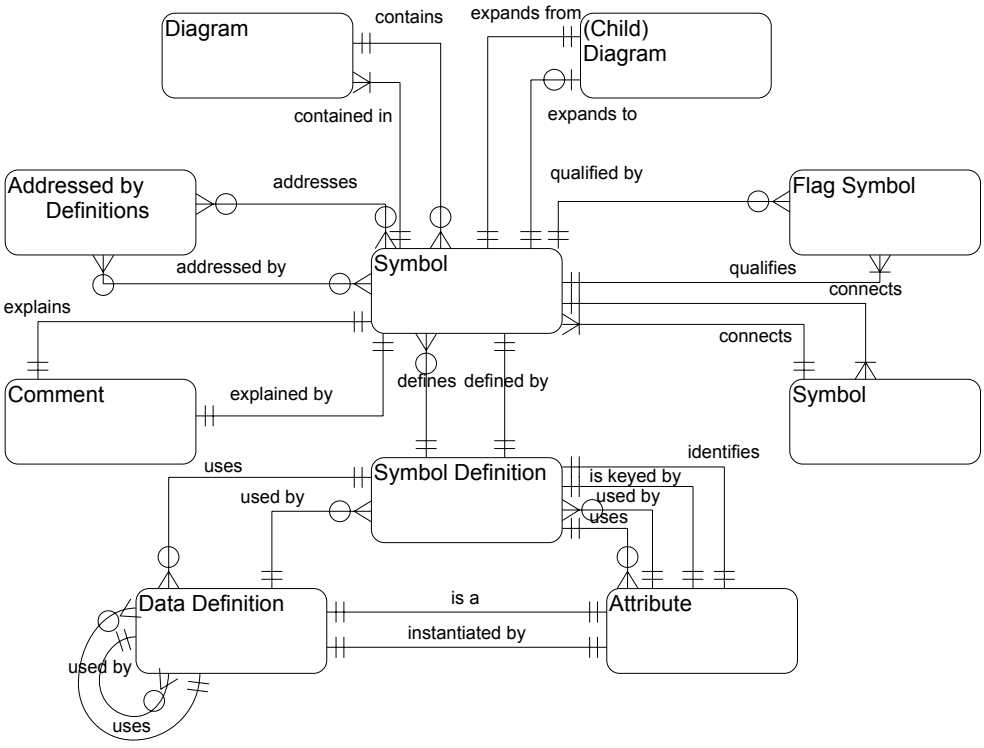


Figure 13 Example Metamodel

Duplicating a Report

The **Duplicate** button will copy the highlighted report.

✋ In the main Report Writer window, click the **Duplicate** button.

The new report is automatically named with a '.1' suffix, but its name can be changed when the duplicated report is edited.

At this point, the window should appear as follows:

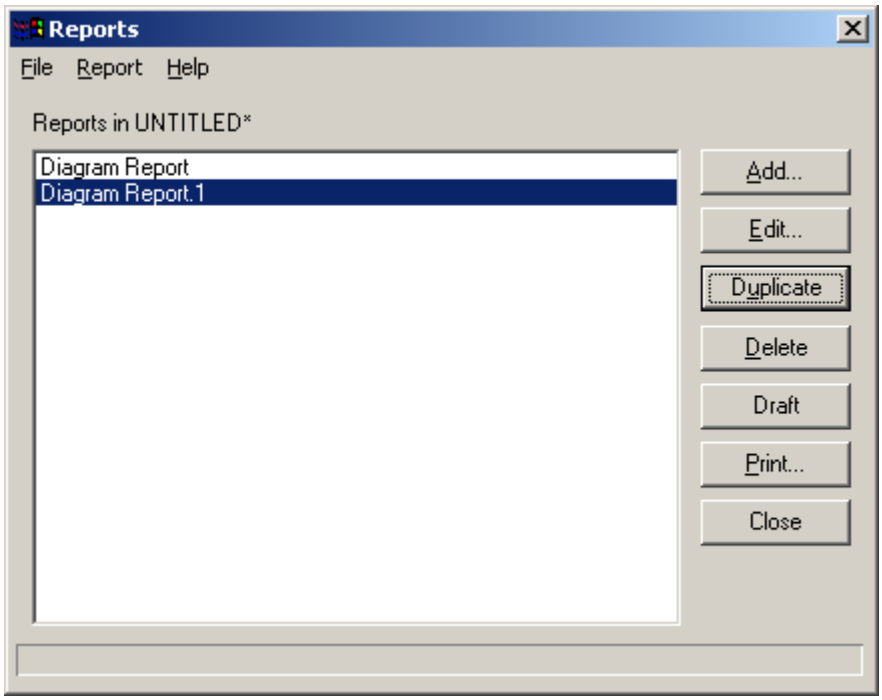


Figure 14 Current Report Writer Window

Further extraction criteria may now be specified to the copy of the first report.

☞ *It is suggested that a copy of a report is always made before any changes are made to it using a Text Editor.*

Text Edit Mode

The Text Editor uses a language similar to SQL to access the Data Dictionary.

The Report Editor automatically creates the SQL needed to run the report. To access the SQL created by the report editor, select the **Text Edit Report...** option from the **Report** menu.

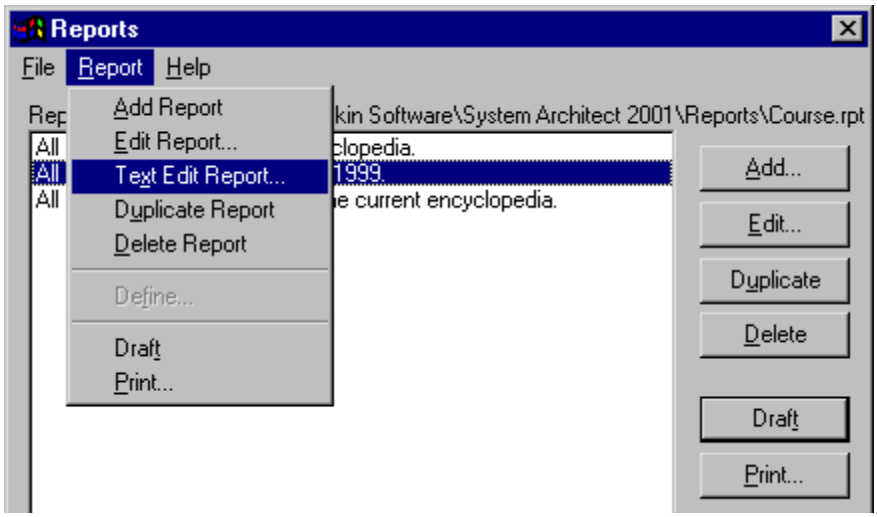


Figure 15 Selecting Text Edit Mode

The report will appear in a text editing window.

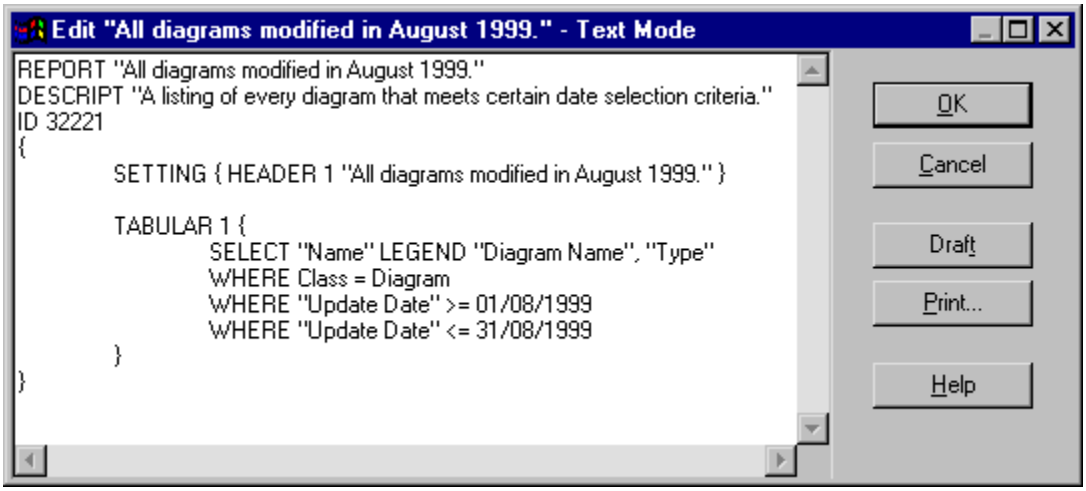


Figure 16 Text Editing Window

☞ *Once a report has been modified in the Text Editor, it will no longer be acceptable to the Report Editor. A report's ID number (ie 32221) controls this acceptance.*

The Commands that Resemble SQL

The SQL portion of the language consists of three commands:

SELECT

WHERE

ORDERBY (true SQL uses ORDER BY)

These commands are augmented by additional statements normally associated with desktop publishing (DTP): fonts, legends, sizing, trailers, borders, page numbering, and so on.

Other commands give you the ability to create reports in matrix format, create output files in dBase and other formats, and to have user-specified 'defines'.

These commands operate as the similarly-named SQL commands do:

SELECT Specifies the fields that will appear in the report. You can only SELECT identifiers which are listed in the *System Architect Reporting System* manual.

You can also SELECT fields that you have defined in USRPROPS.TXT, by defining them as a FIELD within the Report file.

WHERE Specifies the criteria for extracting records. These WHEREs are treated as an OR function (either can be true) because they are separated by a comma:

```
WHERE Type = Process, "Data Store"
```

These WHEREs are treated as an AND function (both must be true):

```
WHERE Class = Definition
WHERE Type = Process
```

ORDERBY Specifies the key field for sorting the extract file. Multiple ORDERBYs are allowed for major/minor sorting.

Note that a field named in an ORDERBY need not be SELECTed.

If a number of fields are used in ORDERBY statements, it may be necessary to restrict the KEYLENGTH that is being used. System Architect can support up to 100 byte ordering keys. If the sum of the ORDERBY fields exceeds this the following constrict can be used.

```
ORDERBY Name KEYLENGTH 10 , Type KEYLENGTH 15
```

The above example uses the first 10 bytes of the Name and the first 15 bytes of the Type field, instead of the full length of each field.

Navigating the Relationships within Reports

A System Architect encyclopedia is implemented as two separate database tables. The two tables are the Entity table and the Relationship table. Each entry within the Entity is identified by a unique 32 bit identifier, and the Relationship table is implemented as a set of directed pairs of identifiers together with the associated relationship type.

Identifier	Name
1	First Diagram
2	Process

Identifier	Relationship	Identifier 2
1	contains	2
2	contained in	1

The reporting tool can be used to report on entities that have a specified relationship with another entity.

Navigating Relationships with the Text Editor

You may also navigate through the relationships using the Text Editor.

To move through a relationship, a JOIN command is used.

What JOIN does

The first phase of reporting is always a scan of the Entities Table in the dictionary.

When a **JOIN** is encountered in the command set, processing jumps to the Relationships Table, where a new scan begins for the relationships that match the selected entities. The next **JOIN** causes another jump back to the Entities Table to find those connected to the previous entity by the current relationship.

JOIN Command in reports

```
REPORT "Diagrams and their Symbols"
{
      TABULAR 1
      {     SELECT Name LEGEND "Diagram Name", Type
            WHERE Class = Diagram
            JOIN
            WHERE Relation = "contains"
            JOIN
            SELECT Name LEGEND "Symbol Name", Type
            WHERE Class = Symbol
      }
}
```

The format of the report produced by these commands is:

```
Diagram
        Symbol
        Symbol
        Symbol          etc
Diagram
        Symbol
        Symbol          etc
```

The first part of the report is similar to the simple report seen earlier:

When an entry in the Entities table is found that matches the **WHERE** criteria of this report, the next command, **JOIN** is executed. This causes a jump to the Relationships entries.

Processing now resumes with the Relationships entries and the next commands in the report are just another set of SELECT/WHERE/ORDERBY statements on the Relationship table (though in the example SELECT and ORDERBY are omitted).

Reporting Exercises

1. **List all symbols in the encyclopedia.**

   Report against Name and Type.

2. **List all definitions in the encyclopedia.**

   Report against Name and Type

3. **List all Symbols, ignoring those without a name** (*hint: use a single space for a NULL value*).

   Report against Name and Type.

4. **List all Logical Node symbols in the encyclopedia**.

   Report against Name and Logical Node Type

5. **List all Diagrams, the symbols on those diagrams, and the definitions that define those symbols**.

   Report against Name and Type for each level of the report.

6. **List all Logical Node symbols and where they are found**.

   Report against Name for the symbols, and Name and Type for the Diagrams.

7. **Attempt to report against all items in the encyclopedia**.

The Word Link

The Word Link (SAWD2001) allows System Architect to transfer Diagrams and Definitions to a Word-processing environment, giving the flexibility and power of a familiar documentation tool.

System Architect and Microsoft Word (for example), both need to be running to establish a link.

Creating a New Document

Templates are used to create new documents. These documents contain Macros that can be executed via special menu options. The Macro will then automate the transfer of Diagrams and/or Definitions from SA2001 into the Word document. Presentation and formatting of the information can also be performed by the macro.

☞ *It is not necessary to have Microsoft Word open to run the reports.*

✋ From the Reports drop down menu, select **Word Reports** and **Audit**

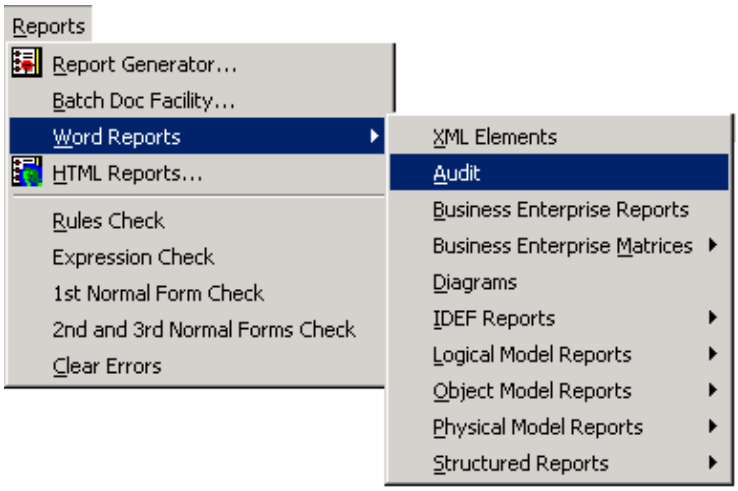


Figure 17 Word Reports drop down menu

This is a perhaps a relatively simple Macro and could be modified to meet the particular needs of the Company. Access to Editing the Macro can be achieved via the **Macro...** option in the **Tools** menu.

✋ Create another document based on the **Diagrams** report.

The HTML Reporting System

The System Architect HTML Reporting System provides for a customizable HTML output. Templates format the output to suit personal preferences or company standards.

The **HTML Reports...** option can be accessed from the **Reports** menu.

Report Settings

The HTML generator has a number of User Settings that control the output of the report.

The General tab allows the user to access and nominate;

- The template on which to base the design of the HTML files.
- The location of the published HTML files.
- An Encyclopedia or Framework based report.

Use the Default template file and select the **Course** folder as the **Publish Home Page**.

Ensure the report type is set to **Framework Report**.

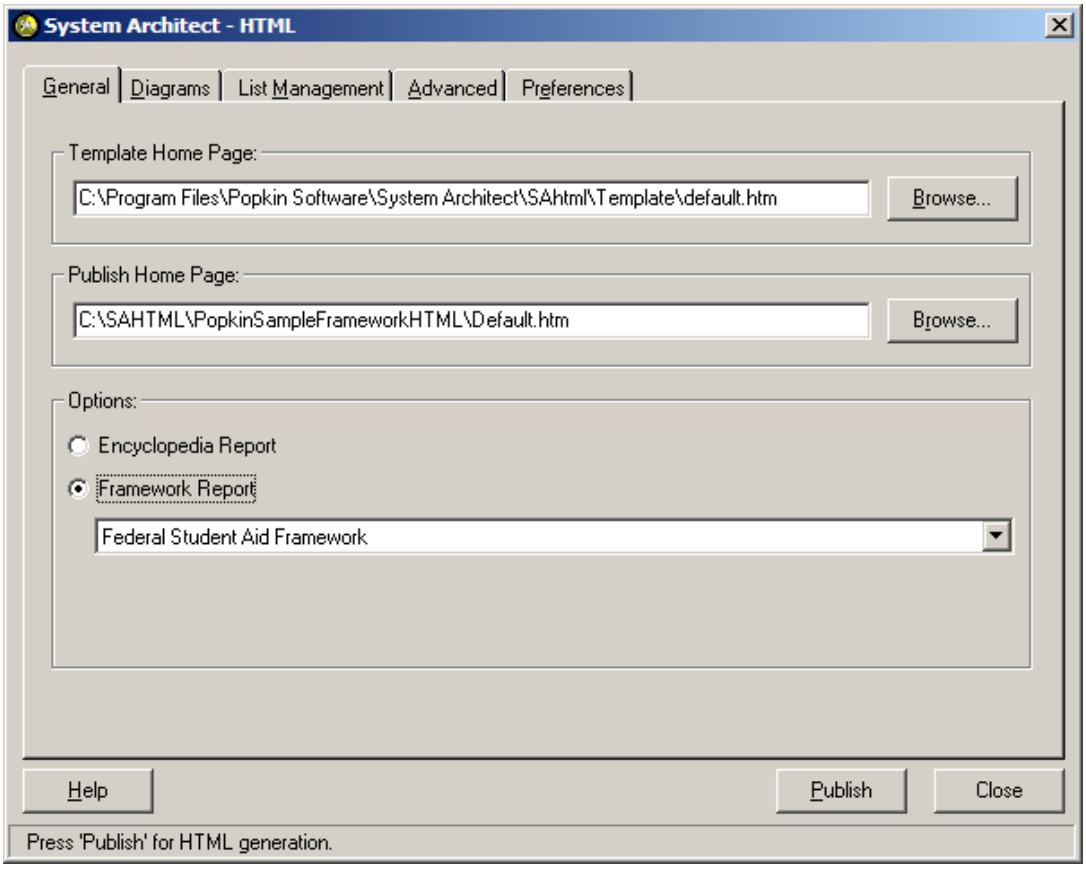


Figure 18 HTML Report Generator - General

Selecting Diagrams

The Diagrams tab allows for the selection of diagrams to be included in the report. The list of diagrams can be filtered on Name and/or Type before clicking on the **Search** button.

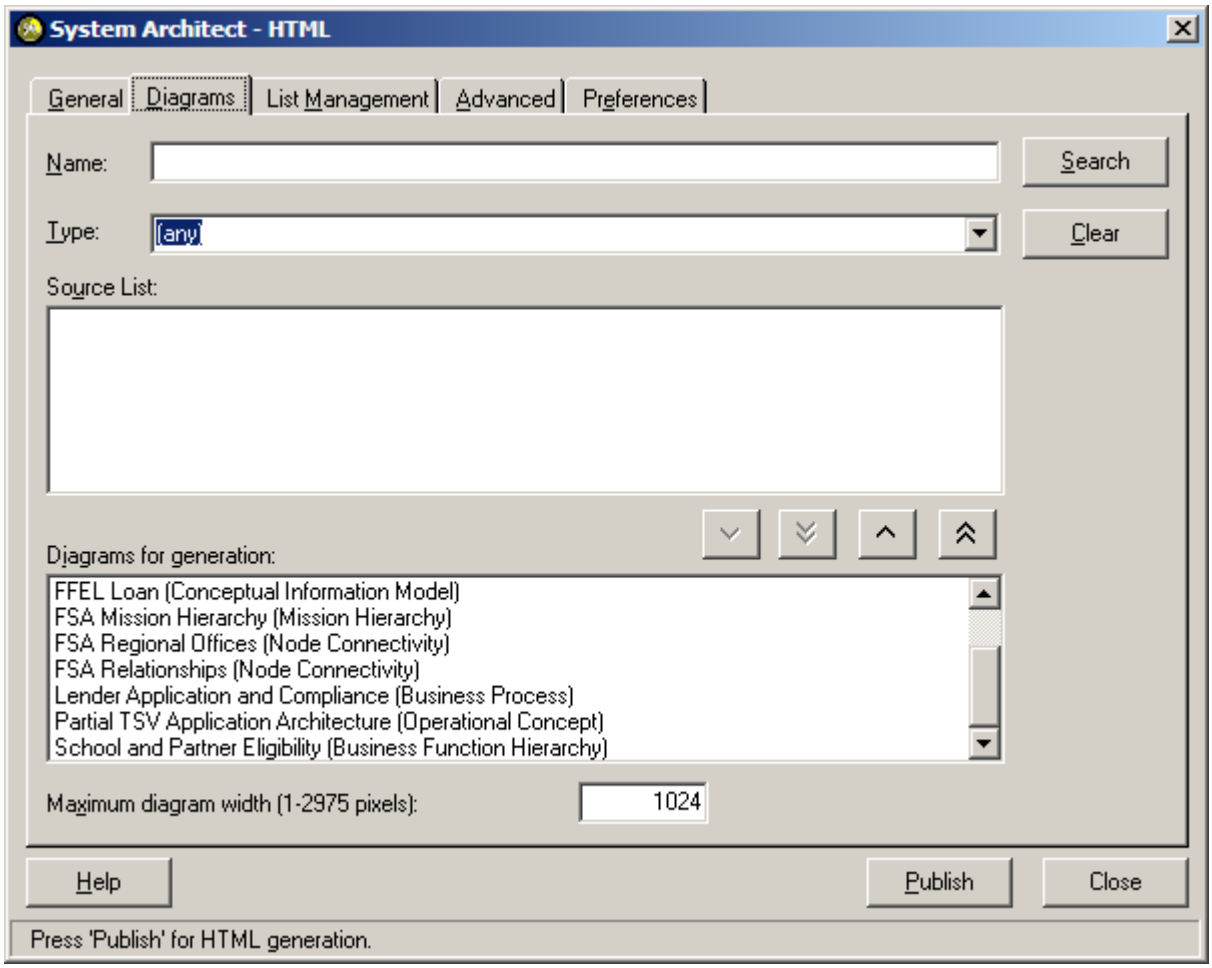


Figure 19 HTML Report Generator - Diagrams

Once the **Source List** has been generated, diagrams can be highlighted and then transferred to the **Diagrams for generation** list by using the appropriate Selection Control button.

- Select all diagrams.

The “List Management” tab allows a list of diagrams to be saved for future retrieval. If there are standard sets of diagrams that are exported to HTML under differing circumstances, these separate sets can be saved as lists. If the “Publish All Diagrams” checkbox is checked, all diagrams will be exported and the list will not apply.

To save a diagram list, enter the name of the list file in the “Diagram list file:” field and click “Save Now”

To use a pre-existing list file, click “Browse…”, select the appropriate list file, then select the “Use list file to publish diagrams” checkbox.

- For now, make no changes to the defaults.

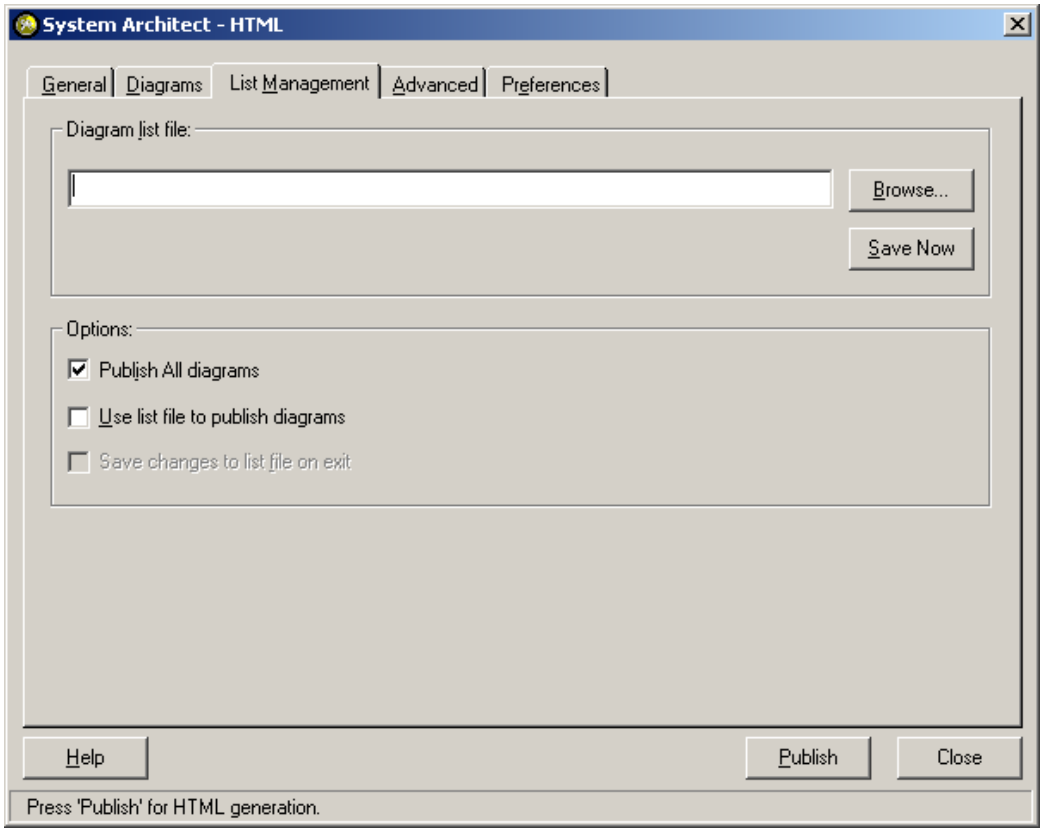


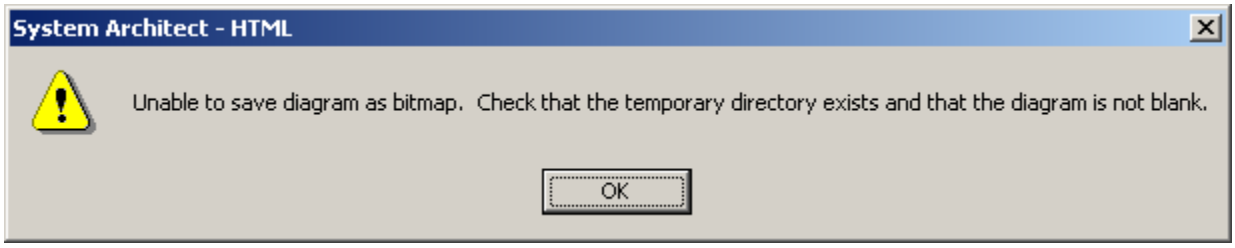
Figure 20 HTML Report Generator - List Management

The Advanced Tab allows the user to set some basic HTML properties such as the background color. All HTML settings have already been set for you using a Cascading Style Sheet template.

The Preferences Tab allows the user to toggle on and off the diagrams, symbols and properties that will be generated, within the scope of the diagrams listed in the Diagrams for Generation property on the Diagrams Tab.

Click the **"Publish"** button to start the report generation.

If any of the diagrams in your encyclopedia are empty, the following error message may appear:



If it does, simply click "OK" and allow the reporting process to continue.